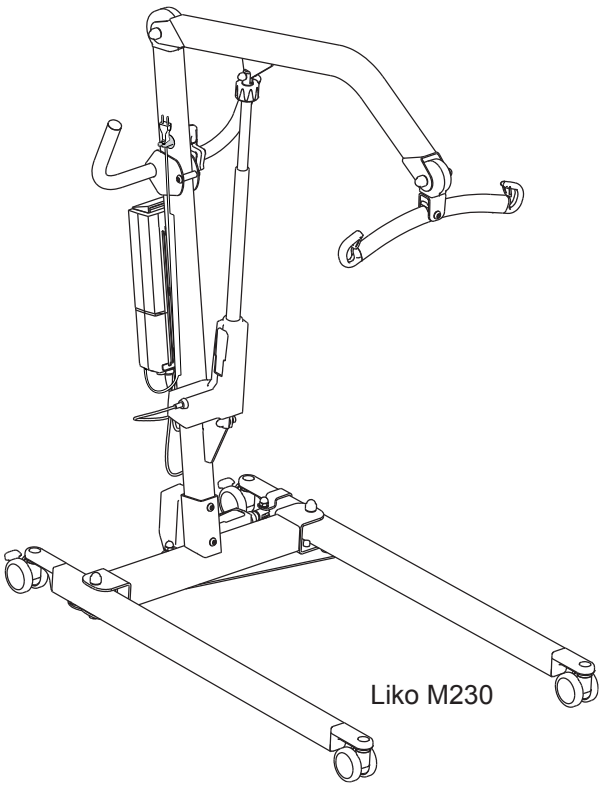
# Liko™ M220 / Liko™ M230

## Instruction Guide

English
7EN150106-04
2012-03-06

**Applies to the following models:**

| | |
|---|---|
| Liko M220 | Prod. no. 2050010 |
| Liko M230 | Prod. no. 2050015 |



Liko M230

## Product Description

Liko M220 and M230 are easy-to-use mobile lifts primarily intended for use in nursing homes and home environment. Both models are excellent aids for daily transfers of adults and children; for instance, for transfers to and from a wheelchair, toilet and floor.

The models differ in the way the base width is adjusted while both lifts feature an electric lift mechanism. Liko M230 has an electric base and Liko M220 a manual base for opening and closing the legs.

An individually fitted sling and other accessories are of utmost significance for performance and safety when using Liko's lifts.

*In this document, the person being lifted is referred to as the patient, and the person helping them is referred to as the caregiver.*

**△ is a warning triangle used for situations which require extra care and attention.**

**IMPORTANT!**
Read the instruction guide for both the patient lift and lifting accessories before use. Lifting and transferring a person always involves a certain level of risk. It is important to completely understand the contents of the instruction guides. The equipment should only be used by trained personnel. Please contact your Liko/ Hill-Rom representative in the event of any uncertainties or questions.

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**△ NOTE!**
This instruction guide contains important information for the user of the product.
All who use the product should review and completely understand the contents of the instruction guide.
Remember to keep the instruction guide in a place where it is always available to those using the product.

**WARNING**
Certain factors may limit the ability of the mobile lift to perform correctly, which may include the following: floor thresholds, multiple heights of the floor surfaces, obstacles, and extra thick pile carpet. These factors can lead to the mobile lift not rolling as intended, possible imbalance of the mobile lift, and additional strain placed on the caregiver. If you are uncertain if your care environment meets the intended requirements please contact your Liko/Hill-Rom representative for further assistance.

Use the handles to maneuver the lift. Do not apply force to the lift arm or directly to the lift mast to maneuver; this may cause a tilting hazard.

# Safety Instructions

**Before using, make sure that:**
- the lift is assembled in accordance with the assembly instructions;
- the lifting accessories are properly attached to the lift;
- charge the batteries for at least 6 hours;
- you have read the instruction guides for the lift and lifting accessories;
- personnel using the lift are informed of the correct operation and use of the lift.

**Before lifting, <u>always</u> make sure that:**
- the lifting accessories are not damaged;
- the lifting accessories are correctly attached to the lift;
- the lifting accessories hang vertically and can move freely;
- the lifting accessories are selected appropriately, in terms of type, size, material and design, with regard to the patient's needs;
- the lifting accessories are correctly and safely applied to the patient in order to prevent injuries;
- the sling bar latches are intact. Missing or damaged latches must always be replaced with new ones;
- the sling's strap loops are correctly connected to the sling bar hooks when the sling straps are stretched up but before the patient is lifted from the underlying surface.

**△ Never leave a patient unattended during a lifting situation!**

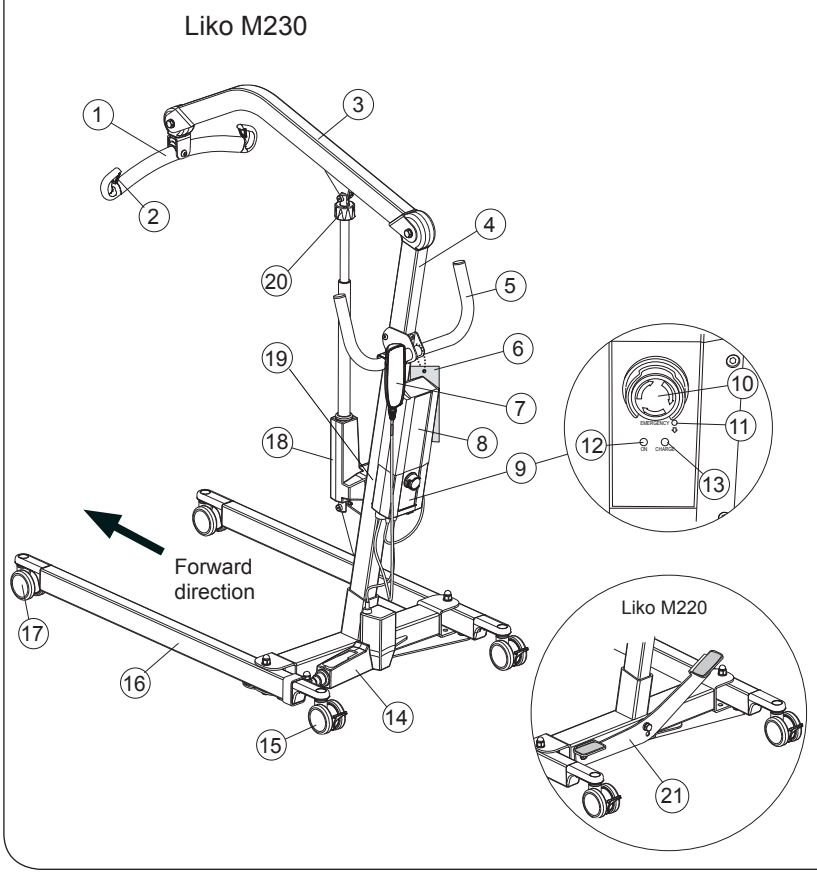
Liko M220 and M230 have been tested by an accredited testing institute and fulfill the requirements specified in the Medical Device Directive 93/42/EEC, for Class I products.

Liko M220 and M230 comply with the requirements in EN ISO 10535:2006, IEC 60601-1, IEC 60601-1-2, IEC 60601-1-11, ANSI/AAMI ES60601-1, and CAN/CSA C22.2 no 60601-1.

**△ Under no circumstances must the lift be modified. Please contact Liko/Hill-Rom for more information.**

Particular care must be taken when using powerful sources of electromagnetic disturbance, so that, for example, diathermy cables are not positioned on or near the lift. If you have any questions, please consult the responsible assistive device technician or the supplier.

# Definitions




1. Sling bar
2. Latches
3. Lift arm
4. Lift mast
5. Handles
6. Quick Reference Guide
7. Hand control with cable
8. Battery
9. Control box
10. Emergency stop
11. Electrical Emergency lowering
12. Green light - power supply to the charger.
13. Yellow light - charging in progress!
14. Motor for electric adjustment of base width (Liko M230)
15. Rear wheels with brake
16. Base
17. Front wheels
18. Lift motor (incl. actuator)
19. Product decal
20. Emergency Lowering (manual)
21. Foot control, manual adjustment of the base width (Liko M220)

# Technical Data

| | |
|---|---|
| **Maximum load:** | 182 kg (400 lbs.) |
| **Material:** | Steel |
| **Weight:** | Gross: (Liko M220) 41 kg ( 90 lbs)<br>(Liko M230) 41 kg ( 90 lbs)<br>Heaviest removable part:<br>(Liko M220) 21 kg ( 46 lbs)<br>(Liko M230) 21 kg ( 46 lbs) |
| **Wheels:** | Front: 75 mm (3 inch.) twin wheels<br>Rear: 75 mm (3 inch.) twin wheels with brakes |
| **Turning diameter** | 1345 mm (53 inch.) |
| **Emergency lowering:** | Mechanical and Electrical |
| **Lifting interval:** | 1150 mm (45.3 inch.) |
| **Lifting speed (no load):** | 18 mm/s (0.7 inch./s) |
| **Sound level:** | 42 dB(A) |
| **Protection class:** | IP X4 |
| **Operating forces of controls:** | Buttons on hand control: 4N |
| **Electrical data:** | 24 V |
| **Intermittent power:** | Int. Op 10/90, active operation max 2 min. Only 10% of a given length of time may be active, but no more than 2 min. |
| **Battery:** | In series: 2 x 12 V 2.9 Ah valve-regulated lead-acid gel batteries. New batteries provided by the supplier. |
| **Battery charger:** | Built-in, 100-240 V AC, 50-60 Hz, max 400 mA. |
| **Lift motor:** | 24 V DC, permanent magnetic motor with mechanical safety mechanism. |
| **Motor for base-width adjustment:** | 24 V DC, permanent magnetic motor. |
| **Climate and environmental conditions during use:** | Temp. range: +15 to +40 °C (+ 59 °F to + 104 °F) without reduced performance.<br>Humidity: 10% - 95% non-condensing, without reduced performance.<br>Air pressure: 70 - 106 kPa without reduced performance. |

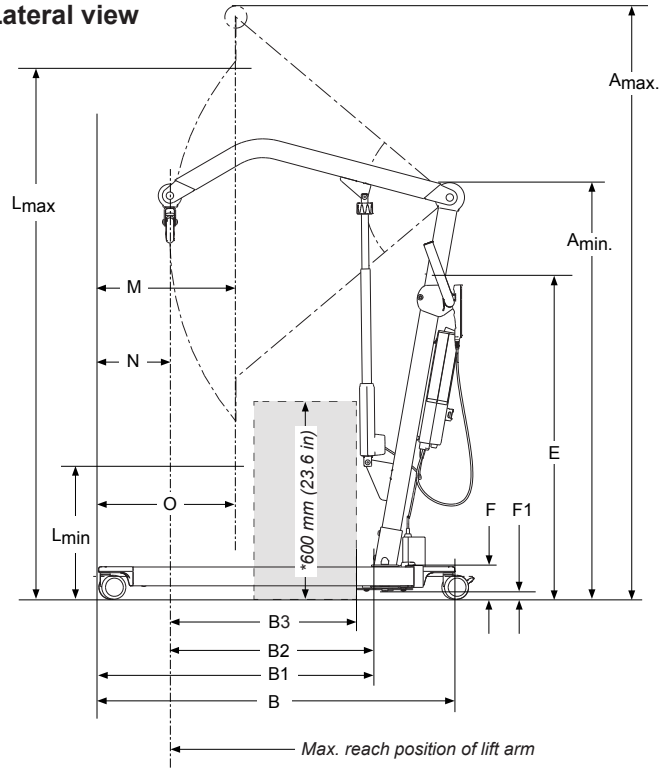
The device is intended for use indoors.

Type B, in accordance with the electrical shock protection class.

Class II equipment.

# Dimensions

**Lateral view**




**Top view**

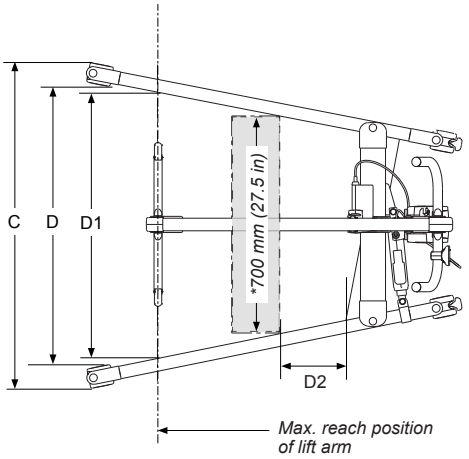



**Table of measurements** **(mm)**

| A max | A min | B | B1 | B2* | B3 | C | | D | | D1 | *D2 | E | F | F1 | Lmax | Lmin | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | max | min | max | min | | | | | | | | | | |
| 1895 | 1330 | 1160 | 892 | 645 | 605 | 1020 | 682 | 970 | 555 | 900 | 210 | 1035 | 105 | 25 | 1720 | 570 | 455 | 245 | 455 |

**(inch.)**

| A max | A min | B | B1 | B2* | B3 | C | | D | | D1 | *D2 | E | F | F1 | Lmax | Lmin | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | max. | min. | max. | min. | | | | | | | | | | |
| 74.6 | 52.4 | 45.7 | 35.1 | 25.4 | 23.8 | 40.2 | 26.9 | 38.2 | 21.9 | 35.4 | 8.3 | 40.7 | 4.1 | 1.0 | 67.7 | 22.4 | 18.0 | 9.6 | 18.0 |

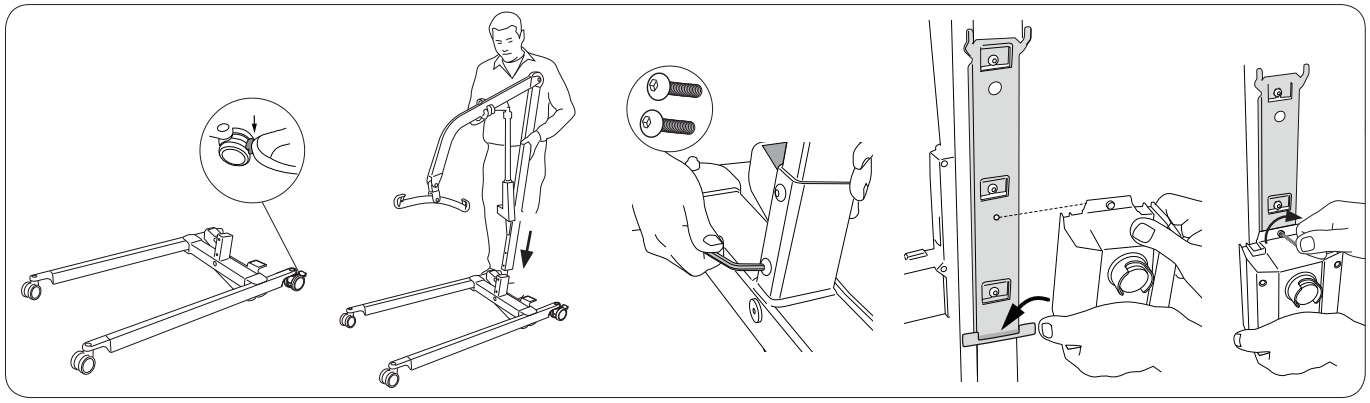
* Reference measurement according to Standard EN ISO 10535:2006.

# Assembly

Remove the two transport safety straps, on the sling bar and on the lift mast.

**Before assembly, make sure you have the following parts:**

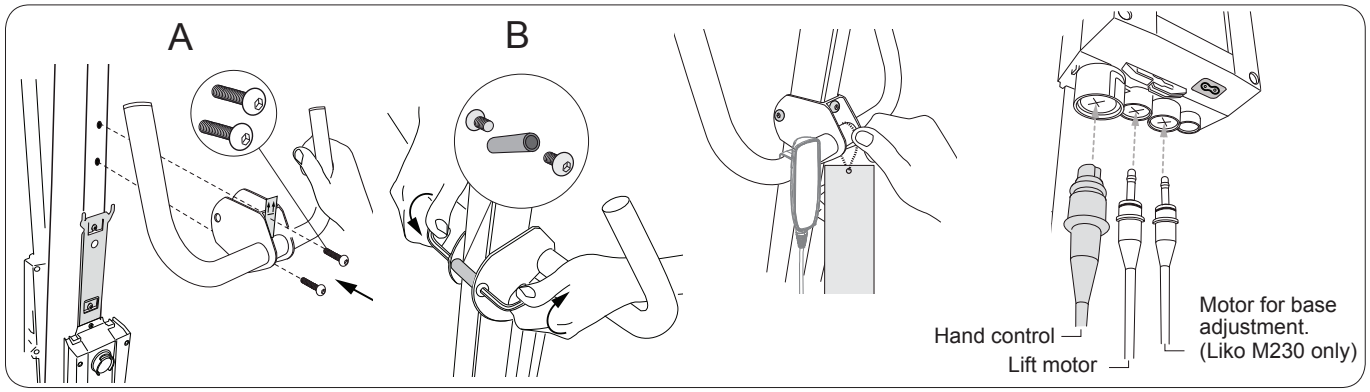
- lift mast with lift arm and sling bar with latches, lift motor (incl. actuator);
- handle
- base with electric (M230) or manual (M220) adjustment;
- control box, charger cable, hand control with cable;
- instruction guide and quick reference guide with chain;
- 4 screw M10x25,
  1 screw M5,
  2 screw M10x16,
  1 casing (M10),
  1 Allen wrench 3 mm,
  2 Allen wrench 6 mm.



1. Place the base on floor with wheels contacting the floor. Lock both rear wheels.
   Place the lift mast in the foot of the base.

2. Secure the lift mast, using two of the M10x25 screws and the 6 mm Allen wrench provided. Make sure screws are tight.

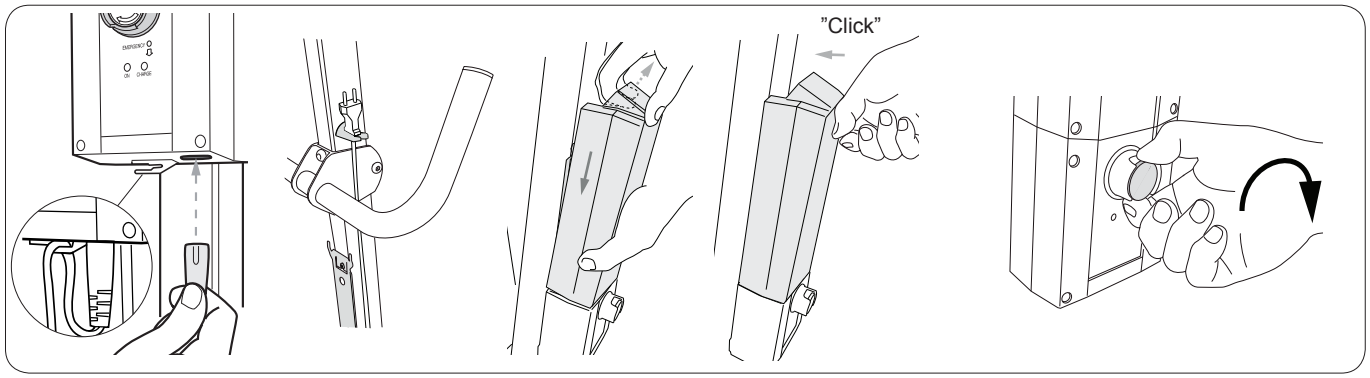
3. Place the control box in the bracket on the lift mast. Lock the control box in place using the M5 screw and Allen key 3 mm provided. Do <u>not</u> over tighten the screw.




4. Install handles at the lift mast:
   A: attach in the lift mast with two M10x25 screws and the 6 mm Allen wrench provided. (Remove decal)
   B: insert the casing (M10) in the forward attachment of the handles, use two M10x16 and the two 6 mm Allen wrenches provided
   Make sure the handles all four screws are tight!

5. Place the quick reference guide (use the provided chain) and the hand control on the handles.

6. Connect cables to the control box, see illustration. Make sure plugs are fully seated.




7. Connect the charger cable to the socket under the control box.
   Make sure the plug are fully seated.
   Attach the cable, see illustration.

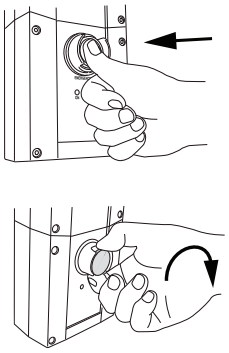
8. Connect the battery and secure it to the control box bracket. A click sound can be heard when the battery is installed correctly.

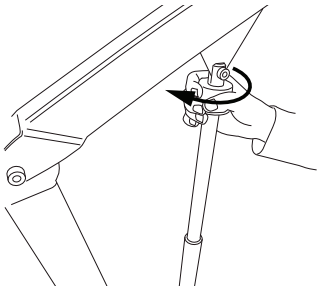
9. Reset the emergency stop by turning the button in the direction of the arrows on the button. Charge the battery, see **"Charging the Batteries"** at page 8.

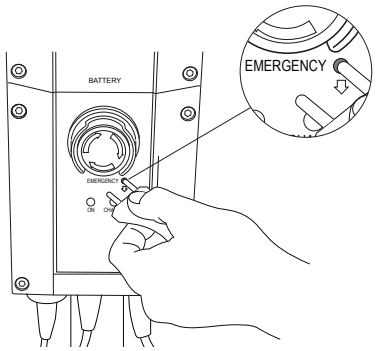
**After assembly, make sure that:**

- the battery of the lift is charged;
- the motion of the lift arm corresponds to the buttons on the hand control;
- the manual and electrical emergency lowering works;
- the adjustment of the base width is functional;
- the rear wheels brakes is functional.

# Operation








**Emergency Stop**

*Use in urgent need to stop all of the lifts electrical functions.*

*Activate*: Press the red button on the control box.

*Reset*: Turn the button in the direction of the arrows until the button springs out.

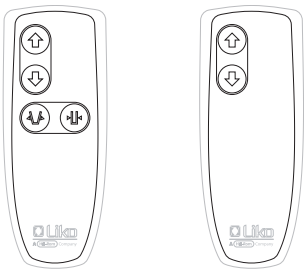
**Manual Emergency Lowering**

Turn in the direction of the arrows on the red cylinder.

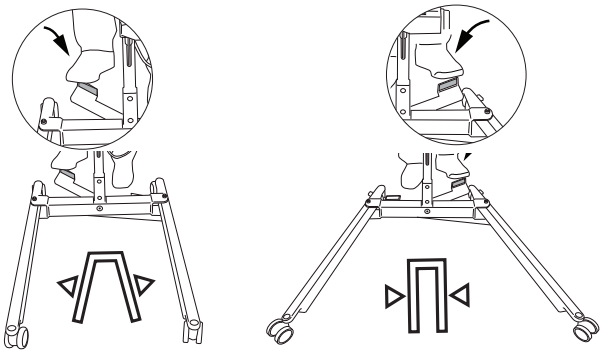
**Electrical Emergency Lowering**

Push a narrow object into the hole marked on the control box (marked Emergency).

**△ The object used to press must not be sharp, since this may cause damage to the control box!**



Liko M230 Liko M220



**Hand control**

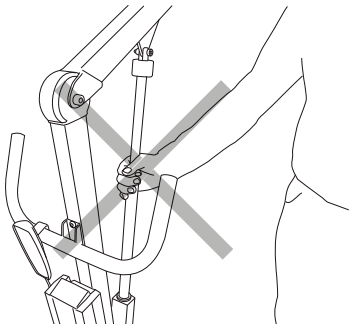
The lifting motion is operated with the push buttons on the hand control. The direction of the arrows applies when the hand control is held as shown in the picture. To raise or lower the lift arm, press ⇧ or ⇩.

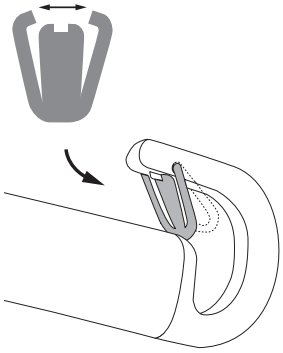
The lifting motion stops when the push button is released.

For electrical adjustment of the base width (Liko M230), push ⇦ or ⇨.

**Manual Adjustment of the Base** (Liko M220)

Press the raised pedal to adjust the base width.

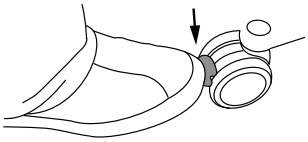


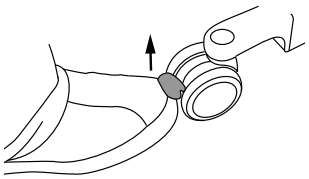


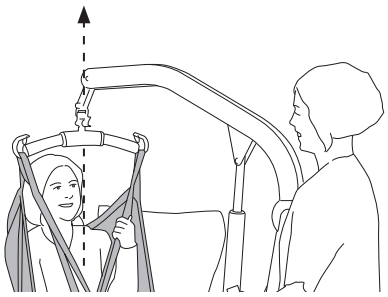
**△ Never move the lift by pulling on the actuator!**

**Installation of latches**

After installation, check that the latch locks and moves freely in the sling bar hook.







**Wheels with brakes**

**During the lifting of a patient, the wheels should be unlocked in order for the lift to be able to center around the patient's center of gravity**

The rear wheels can be locked against rotation and turning. To lock the wheel, press down the lock pedal. To release the brake, lift up the lock pedal with your foot.

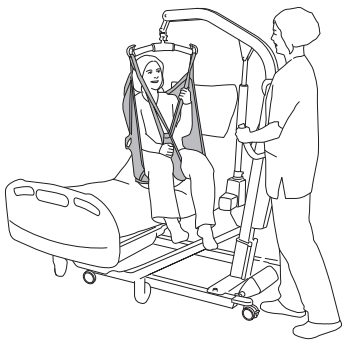
**Always Lift Securely**

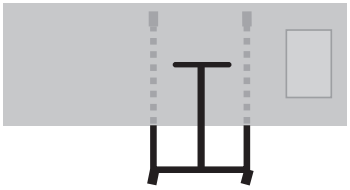
Always lift with the sling bar vertically above the patient's center of gravity. To obtain this, consider the placement of the lift in relation to the patient. Read the section "Position of the Lift when Lifting", page 7. Before each lifting situation, ensure the lifting procedure is performed correctly.

**△ Unbalanced lifting poses a tipping risk!**

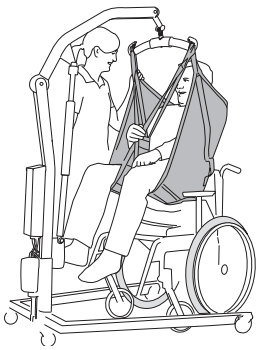
## Position of the Lift when Lifting

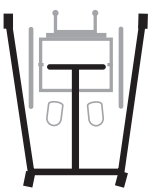
From/To: Bed



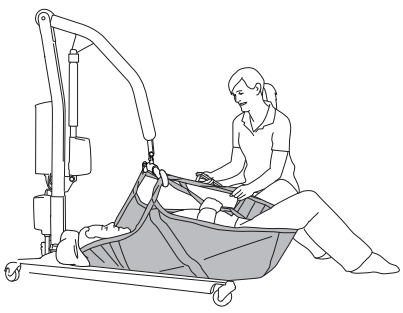


Chair/Toilet Seat

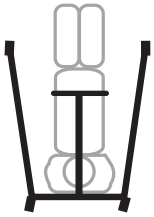




Floor



NOTE: Place a pillow under the patient's head for increased performance and comfort. Always have the wheels locked when lifting from the floor.



# Charging the Batteries

**Indications for Charging the Battery**

In the event of low battery voltage, a signal from the control box will sound. The sound will occur only when one button on the hand control is pushed in. When this happens, the battery must be charged as soon as possible. However, there is still sufficient power for additional lifts.

**Battery Charging and Maintenance**

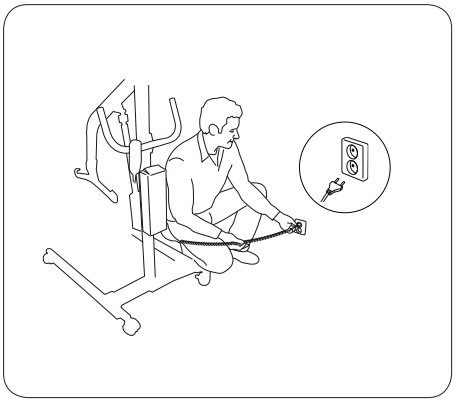
To get maximum battery life, it is important to charge the battery regularly. We recommend charging after use of the lift or every night. Batteries are fully charged after approx. 6 hours. When the battery is fully charged, the charger is switched off automatically. If the lift is not used every day, we recommend connecting it to the charger, or pressing the emergency stop after use, in order to turn off the power and save the battery. Ensure that the battery is fully charged before pressing the emergency stop.

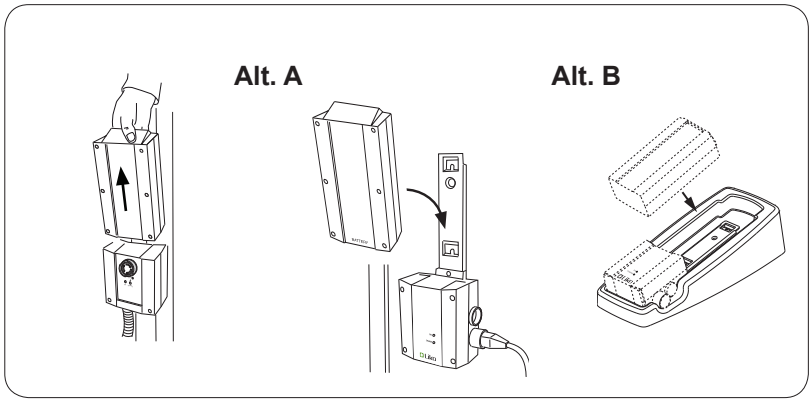
**NOTE:** The lift cannot be charged with the emergency stop engaged.

**NOTE:** When charging, a yellow indicator light on the control box will illuminate. The yellow light turns off when the battery is fully charged. If the light has not turned off after 8 hours of charging, the battery may need to be replaced. Stop charging and replace the battery.

**⚠ Never charge batteries in a wet area.**

**Alternative Charging Procedures**






**Built-in Charger (standard):**

Connect the charger cable to an electrical outlet (100-240 V AC). Make sure that both lights on the control box are lit. The yellow light indicates charging and the green light indicates that power is being supplied to the charger. If the charger cable is beginning to stretch, it should be replaced in order to minimize the risk of the cable getting caught and breaking.

**NOTE: The lift cannot be used when the charger cable is plugged into an electrical outlet.**

**Wall-Mounted Charger or Table Charger:**

Remove the battery from the control box by releasing the locking device on top of the battery.

**Alt. A. (accessory)** Place the battery on the wall-mounted charger. Plug the charger into an electrical outlet (100-240 V AC). Make sure that both lights on the charger are lit. The yellow light indicates charging and the green light indicates that power is being supplied to the charger.

**Alt. B. (accessory)** Place the battery on the charger in the table charger housing. Plug the charger into an electrical outlet (100-240 V AC). Make sure that both indicator lights on the charger are lit. The yellow light indicates charging and the green light indicates that power is being supplied to the charger.

Liko M220 and M230 comply with the Directive 2002/96/EC on waste electrical and electronic equipment. Old batteries are to be deposited at the nearest recycling facility in accordance with local regulations or given to personnel authorized by Liko/Hill-Rom.

# Maximum Load

Different maximum loads may apply to different products on the assembled lift unit: lift, sling bar, sling and any other accessories used. For the assembled lift unit, the maximum load is always the lowest maximum load rating for any of the components. For example, a Liko M220/Liko M230 which is approved for 182 kg (400 lbs) can be equipped with a sling which is approved for 200 kg (440 lbs). In this case, the maximum load of 182 kg (400 lbs) applies to the assembled lift unit. Check the markings on the lift and lifting accessory or contact your Liko/Hill-Rom representative if you have any questions.

# Recommended Lifting Accessories

**△ Using lifting accessories other than those approved can entail a risk.**

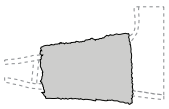
When changing lifting accessories, the highest possible lifting height of the lift is affected. Therefore, before changing lifting accessories you should always ensure that the lift, after change, can fulfil the desired lifting height in order to manage the lifting situations for which the lift is to be used.

For Liko M220 and Liko M230 all slings compatible with Universal SlingBar 450 are recommended. To select suitable slings and other lifting accessories, refer to the brochure ”Lifting accessories”. For additional guidance in selecting a sling, refer to the instruction guides for the respective sling models. Here, you will also find guidance for combining Liko’s sling bars with Liko’s slings.

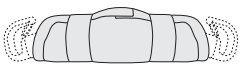
Contact your Liko/Hill-Rom representative or visit www.liko.com for advice and information on Liko’s product range.

**Head Support** Prod. No. 3651115

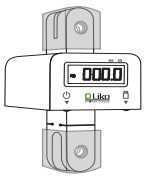
**Padded Casing Leg Support** Prod. No. 3666050



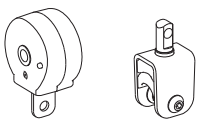
**SlingBar Cover Paddy 30** Prod. No. 3607001



**Scales**
LikoScale can be used in combination with Liko M220, M230.
Contact your local Liko/Hill-Rom representative for more information.



**Adapter Kit LikoScale Liko M220/M230** Prod. No. 3156233

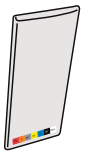


**Quick Reference Guide Liko M220/M230**
with chain.

Prod. No. 2050100EN

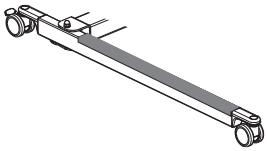
**Holder for Quick Reference Guide**

Prod. No. 2000100



**Leg Protector**

Prod. No. 20190029



**Battery Charger**
For wall installation or for use with table charger housing.

Prod. No. 2004106

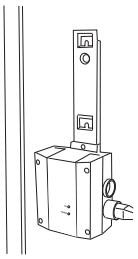
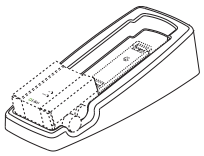


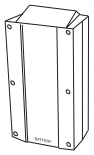
**Table Charger Housing**
excl. charger.

Prod. No. 2107103



**Extra Battery**

Prod. No. 2006106



# Simple Troubleshooting

**The lift doesn't work up/down.**

**Electrical adjustment of the base width does not work, in/out (Liko M230 only).**

1. Check that the emergency stop has not been engaged.
2. Make sure that the cables to the control box are connected correctly.
3. Make sure that the charging cable is not connected to an electric outlet.
4. Check that the battery is charged.
5. Check that the battery's contact plates are not defective or broken.
6. *If the problem persists, please contact Liko/Hill-Rom.*

**The charger doesn't work.**

1. Check that the emergency stop has not been engaged.
2. Check that the battery's contact plates are not defective or broken.
3. *If the problem persists, please contact Liko/Hill-Rom.*

**The lift is stuck in the high position.**

1. Check that the emergency stop has not been activated.
2. Use the electrical emergency lowering device to lower the patient onto a firm surface.
3. Use the manual emergency lowering device to lower the patient onto a firm surface.
4. Check the battery voltage.
5. *If the problem persists, please contact Liko/Hill-Rom.*

**If you hear unusual sounds.**

*Contact Liko/Hill-Rom.*

# Inspection and Maintenance

### Care and Maintenance

For trouble-free use, certain details should be checked each day the lift is used:

- Inspect the lift and check to make sure that there is no external damage.
- Check the functionality of the latches.
- Check the integrity of the lifting motion and the base-width adjustment.
- Check to make sure that the emergency lowering (both electrical and manual) works.
- Charge the batteries each day the lift is used and make sure the charger works.

Please contact your Liko/Hill-Rom representative in the event of any uncertainties or questions.

When necessary, clean the lift with a moist cloth, using warm water or disinfectant.
**NOTE! Do not use cleaning agents that contain phenol or chlorine, since these can damage aluminium and plastic materials.**
**△ The lift should not be exposed to running water.**

### Service

Liko M220/Liko M230 should be periodically inspected at least once a year.
**△ Periodic inspection, repair and maintenance should be performed only in accordance with the Liko Service Manual and by personnel authorized by Liko and using original Liko spare parts.**

### Service Agreement

Liko/Hill-Rom offers the opportunity to enter into service contracts for the maintenance and regular inspection of your Liko product.

### Expected Life Time

The product has an expected life time of 10 years when correctly handled, serviced and inspected in accordance with Liko's instructions.

### Transport and Storage

During transportation, or when the lift is not to be used for a long time, the emergency stop should be engaged. The environment where the lift is transported and stored should have a temperature of -20 to +40 °C (-4 °F to + 104 °F) and a relative humidity of 10 to 95 %. The air pressure should be 700–1060 hPa.

### Recycling

For instructions on how to recycle your Liko product, please visit our website: www.liko.com.

### Product Changes

Liko/Hill-Rom reserves the right to make product changes without prior notice. Contact your Liko/Hill-Rom representative for advice and information about product upgrades.

### Design and Quality by Liko in Sweden

*Liko is quality-certified in accordance with ISO 9001 and its equivalent for the medical device industry, ISO 13485. Liko is also certified in accordance with environmental standard ISO 14001.*

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